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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/165,513 10/02/98 VIJAYEN

V 14089-002540

EXAMINER

IM52/0822

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ART UNIT

PAPER NUMBER

1773

DATE MAILED:

08/22/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

# Office Action Summary

Application No.

09/165513

Applicant(s)

VIJAYAN &amp; Co

Examiner

RESAN

Group Art Unit

1723

— The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address —

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- ☒ Responsive to communication(s) filed on 6-12-01
- ☒ This action is **FINAL**.
- ☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 1 1; 453 O.G. 213.

## Disposition of Claims

- ☒ Claim(s) 38-46, 48-63 is/are pending in the application.
- Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- ☒ Claim(s) 38-46, 48-63 is/are rejected.
- ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- ☐ Claim(s) \_\_\_\_\_ are subject to restriction or election requirement

## Application Papers

- ☐ The proposed drawing correction, filed on \_\_\_\_\_ is ☐ approved ☐ disapproved.
- ☐ The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner
- ☐ The specification is objected to by the Examiner.
- ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. § 119 (a)-(d)

- ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119 (a)-(d).
- ☐ All ☐ Some\* ☐ None of the:
- ☐ Certified copies of the priority documents have been received.
- ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_
- ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a))

\*Certified copies not received: \_\_\_\_\_

## Attachment(s)

- ☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). \_\_\_\_\_
- ☒ Notice of Reference(s) Cited, PTO-892
- ☐ Notice of Draftsperson's Patent Drawing Review, PTO-948
- ☐ Interview Summary, PTO-413
- ☐ Notice of Informal Patent Application, PTO-152
- ☐ Other \_\_\_\_\_

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### DETAILED ACTION

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
2. Claims 38-46, 48-63 are rejected under 35 U.S.C. 103(a) as being unpatentable over Doctoral Dissertation by Vijayen S. Veerasamy ref BU (of record).

The publication by Mr Veerasamy published over a year prior to the US priority documents constitutes prior art to the claims of this application.

The dissertation discloses an article comprising a layer of highly tetrahedral amorphous carbon with sp<sup>3</sup> carbon bonds which range from 15-80% (see pg 115) and may contain H and N (see pgs 129, 198, 225). The Raman spectrum peak for the carbon film is a single peak (since the film is transparent peaks from the substrate are also present. See page 129 for a discussion of the Raman Spectrum including the footnoted references.

It would have been obvious to one of ordinary skill in the art to include H and N at various optimized levels for their imparting to the film of beneficial electronic properties (see pg 140, 168) H and N contents are disclosed which overlap the ranges of claims 39 and 40 (p 198+ pg 225) and overlap conductivities in claims 41, 42 (pg 219).

The bonds are stable as in claim 43 (pg 135), the layers smooth & continuous as in claim 44 (pg 89) and may range up to > 70% sp<sup>3</sup> bonds as in claims 45, 46 (which would yield a smooth single peak Raman Spectrum free from a D peak.) pg 115. The hardness is in the range of claim 55, 56 (pg 100) and density in the range of >2.5g/cm or in claim 57 (pg 93, 173). The

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carbon layer is formed by impact energy of 100-120 ev per carbon as in claim 60, however process limitations are given little weight in article claims unless it can be shown that they produce a patentably distinct article. It would have been obvious to one of ordinary skill in the art to minimize thickness for electronic applications to enable micro miniaturization of electronic devices.

The summary, in view of the disclosure and teachings within the dissertation it would have been obvious to one of ordinary skill in the art to vary the results effective variables taught therein in order to optimize a carbon film for specific electronic application. (See page 276-278)

3. Claim 38 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hayashi U.S. 6,194,047.

See Fig 1.( Figure 4 which is deemed a ta:CH carbon > 15% sp<sup>3</sup>). While Hayashi does not exemplify an embodiment containing N. Hayashi teaches the addition of N (col. 3 lines 64) in order to relax internal stress of the film and therefore improve- adhesion to a substrate.

Therefore it would have been obvious to one of ordinary skill in the art to add nitrogen for this purpose.

4. Applicant's arguments with respect to claims 38-46 have been considered but are moot in view of the new ground(s) of rejection.

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

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A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stevan A. Resan whose telephone number is (703) 308-4287. The examiner can normally be reached on Tues - Fri from 7:30 a.m to 6:00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Thibodeau, can be reached on (703) 308-2367. The fax phone number for the organization where this application or proceeding is assigned is (703) 305-5436.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

S.A. Resan/th

August 20, 2001

  
**STEVAN A. RESAN**  
**PRIMARY EXAMINER**